Taxis in Santa Cruz: Uncontrolled mobilization

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Introduction

Since the 1980s, the lifestyle of the resident population of Galapagos has changed rapidly, appearing more and more like the lifestyle of continental Ecuador. This process of continentalization (Grenier, 2007) has accelerated in the last decade and is characterized by increased use of motorized terrestrial transportation. These changes are taking place primarily in Puerto Ayora, Santa Cruz, the economic center of Galapagos and home to approximately two thirds of the insular population (INEC, 2006). The increase in the use of motorized vehicles – especially taxis – transforms both the inhabited space of Santa Cruz and the relation of its inhabitants to their surroundings, which is referred to in this article as the “geographic milieu” of the insular population. The objectives of this article are: (i) to better understand the socioeconomic aspect of the taxi system; and (ii) to show that the increasing use of taxis contributes to a transformation of the geographic milieu of Santa Cruz, creating challenges for decision-makers who seek to maintain an insular lifestyle and to protect the environment.

Methods

Study area

This study was completed between February and April 2009 in Santa Cruz. Santa Cruz was chosen because terrestrial transport is more developed on the island, making it easier to observe the role of taxis in transforming living space and the geographic milieu.
Data collection

At the time of this study, a complete census of vehicles in Santa Cruz had not been completed (INGALA completed one in 2009, which is reported in this volume). The only database available was the municipal vehicle registry initiated in 1999. However, this source did not clearly indicate whether or not a vehicle was used as a taxi. Therefore it was necessary to cross-reference these data with information obtained from the three taxi cooperatives and two taxi companies on Santa Cruz, each of which has documentation for the permits issued by the Provincial Council of Transit and Transportation (now the Provincial Commission of Transportation, Transit, and Road Safety). However, knowing the number of taxis sensu strictu is not sufficient to explain how these vehicles and their use contribute to the organization and transformation of the landscape and the relationship of the population with its environment.

For this reason, the study observed the operation of taxis on the roads of Santa Cruz. Vehicles were counted at seven representative locations in Puerto Ayora. Circulating vehicles were counted every day of the week at the same times (7h-8h, 11h30-12h30, 17h-18h). This process was conducted twice at each location. Vehicles were classified by type: construction machinery and cargo transport, taxi, private non-professional vehicle, bus and minibus, motorcycle, and institutional and private business vehicles. In the case of taxis, it was also noted whether or not the vehicle carried passengers.

To determine the relationship between the data collected and the impacts of taxis, the study took into account the organization and evolution of the physical space of Santa Cruz (Sánchez, 2007). However, the 119 surveys of taxi drivers and 63 of taxi owners provided the best information regarding the space used by taxis in Santa Cruz. The surveys provided a deeper understanding of the role of taxis in the evolution of the geographic milieu of Santa Cruz inhabitants, in part because the relationship between society and its environment includes a subjective dimension that cannot be analyzed solely through traditional statistical data. The surveys had the advantage of providing insights based on perceptions, as well as qualitative and quantitative data related to the financial dimensions of the taxi sector that are unavailable through information provided by public institutions or taxi cooperatives and companies. For example, only those people directly involved in the sector could provide information on costs and benefits and the sharing of costs and income between taxi drivers and owners.

Results

The total number of vehicles and taxis: unlimited growth?

According to the vehicle census completed by INGALA in 2009, there were 1962 vehicles registered in Galapagos, of which 1074 are located in Santa Cruz. In Santa Cruz, 205 of these vehicles were taxis (Oviedo et al., this volume). This number is lower than INGALA’s 2006 estimate, which indicated “at least 2051 vehicles in Galapagos” and 1276 vehicles in Santa Cruz (Villa, 2007; pp 74). However, even the casual observer will note that the number of vehicles has not declined. In fact, 93% of 120 inhabitants surveyed in 2008 indicated that traffic has increased in recent years (Grenier, 2008).

The current study is based on 260 taxis in Santa Cruz, which is the number of taxis registered by Santa Cruz taxi cooperatives and companies with the Provincial Commission of Transportation, Transit, and Road Safety. The INGALA census of 2009 shows 55 fewer taxis than the registry, highlighting a problem in data keeping, perhaps related to the sensitive nature of this topic.

It is clear that taxis play an increasingly important role in the life of the population of Santa Cruz. In 1990 there was only one taxi for every 350 inhabitants (15 taxis in the island), while in 2006 (the last population census) there was one taxi for every 50 inhabitants. In 2008, it was estimated that 64% of the population of Santa Cruz used taxis at least a few times each week (Grenier, 2008).

The evolution of mobility in Santa Cruz is reflected by the increase in the number of taxis as well as the number of vehicles in general (Figure 1), which reveals a growing dependence on the use of motorized vehicles. The sale of fuel destined for terrestrial transport is also a good indicator of this evolution. Using survey results and data from Petroecuador, it is estimated that each taxi consumes an average of eight gallons per day, which translates into fuel consumption by the taxi fleet in Santa Cruz of approximately 1800 gallons per day. This represents US$2500 in average daily sales for Petroecuador or 55% of all fuel destined for terrestrial transport in Santa Cruz.
Figure 1. The growth in the number of taxis is part of a general tendency of unsustainable growth in the total number of vehicles, the annual number of tourists, and the annual fuel consumption. Sources: Taxi cooperatives and companies, 2009; Municipal records of Santa Cruz, 2008; Petroecuador, 2008; GNPS, 2008; Grenier, 2007.

Pervasiveness of taxis in Santa Cruz

The vehicle counts in this study show that taxis represent 62% of the vehicles that circulate in Puerto Ayora and almost 80% if we exclude two-wheeled vehicles (Figure 3; Map 1). The highest densities of taxis are found on Baltra Avenue (Figure 2) and Charles Darwin Avenue, which are the areas of busiest economic activity. The area near the dock, where the two principal routes cross, forms the circulation hub of taxis in Santa Cruz. Traffic jams are most frequent at the foot of Baltra Avenue. Significantly fewer taxis circulate in the residential neighborhoods in the northern part of the city, although a large portion of the population lives there.

Figure 2. Traffic on Baltra Avenue at 5 PM, Puerto Ayora, February 2010. Photo: Emmanuel Cléder.
Figure 3. Classification of vehicles in circulation in Puerto Ayora indicating the average number observed per hour by location. The letters (A-G) reference the sites where the counts were made – see map.
New housing area “El Mirador”

To Bellavista (7 km)
Santa Rosa (23 km)
Itabaca Channel (45 km)

NATIONAL PARK

To GNPS
CDRS

Port
To San Cristóbal, Isabela, Floreana

Pelican Bay
To the Other Side

References of the locations for counts
Average number of taxis per hour
Proportion of taxis relative to other types of vehicles

Primary use of the space

Tourist activities
Diverse economic activities
Residential
Equipment and public services

Taxis
Other motorized vehicles

Notes:
CDRS: Charles Darwin Research Station, GNPS: Galapagos National Park Service
Sources: Personal counts, INGALA, Municipality of Santa Cruz (land ownership map of 2007)

Map 1. Circulation of taxis in Puerto Ayora. Map design: Emmanuel Cléder
The observed densities of taxis do not truly reveal the use of taxis by the population. Since there are no specified taxi stands, taxis often circulate empty (Figure 4). A high degree of competition and no coordination of schedules among taxi drivers result in constant circulation, whether carrying passengers or not. The number of circulating unoccupied taxis varies by location. Baltra Avenue and Charles Darwin Avenue in front of the Port Captaincy represent extreme examples of inefficiency in the use of taxis in Santa Cruz, with almost two thirds of the vehicles circulating empty. The current method of searching for passengers by constantly circulating Puerto Ayora creates traffic jams, increased noise and air pollution, and greater danger for pedestrians and cyclists than would occur if taxis circulated only when carrying passengers.

![Figure 4. Number of taxis observed by hour and rate of occupation (%), by location. Note: data from the road to the CDRS and the GNPS are not included as few taxi use that route.](image)

The increase in motorized transport and circulation of taxis is directly related to the expansion of the urban zones of Puerto Ayora. The road between Puerto Ayora and the Itabaca Channel, the backbone of terrestrial transport in Santa Cruz, concentrates the majority of the circulating taxis (Map 2). However, most taxi fares occur between Puerto Ayora and Bellavista, which has become a suburb of Puerto Ayora, in part due to the growing number of taxis. Today many people live in the highlands and work in Puerto Ayora. The increased population living in the highlands results in greater dependence on the use of personal cars or motorcycles, taxis, and buses.

### Impacts of taxis on the geographic milieu of Santa Cruz inhabitants

The increase in circulation and use of taxis has measurable environmental impacts in Santa Cruz, such as animals, especially birds, struck by vehicles (Jiménez-Uzcátegui and Betancourt, 2008). The high fuel consumption by taxis (taxis average 240 km/day) results in carbon dioxide emissions of nearly 12 tons per day. In addition, the high fuel consumption creates an increased demand for tanker ships to Galapagos, which in turn increases the risk of fuel spills. Additional impacts that are more difficult to measure must also be considered, such as increased noise, the degradation of island vistas, and increased stress among inhabitants due to the danger generated by the vehicular traffic.

The geographic milieu of the inhabitants of Santa Cruz has been even more impacted. The use of taxis makes everything closer. People become more and more accustomed to using motorized vehicles, even for short distances—sometimes less than two blocks, according to taxi drivers surveyed. Urban space appears to become larger for a population that “no longer wants to walk,” as many of the taxi drivers indicated. These attitudes reflect a significant evolution in lifestyle. As the population attempts to gain economic benefit from the geographical opening of the island,

1According to the website of Toyota, a taxi such as those that circulate in Santa Cruz emits an average of 220 g of CO2 per kilometer (www.toyota.com).
everything becomes faster than before and more like continental Ecuador. One could hypothesize that an individual does not have the same relation to his or her environment when they walk, ride a bicycle, or circulate in taxi (or in other motorized vehicles), and that their mode of transport will affect their perceptions of their environment and their views towards the conservation of Galapagos. This theme must be investigated further (see Grenier, 2008).

**Why is the number of taxis in Santa Cruz increasing so rapidly?**

The increase in taxis in Santa Cruz is driven by the income generated by this sector (an average of US$380,000/month is generated by taxi fares in Santa Cruz). To understand how this economic sector is organized and why it attracts so many investors, it is necessary to examine three categories of participants: (i) owners who lease their taxi to a driver; (ii) taxi drivers who own their vehicle; and (iii) taxi drivers who are employees and do not own their own vehicle.

Today in Santa Cruz, there are 204 owners of 260 registered taxis; 84% own a single vehicle and 12% own two taxis, while seven owners have three or four vehicles and the two major owners have six and eight taxis, respectively (Santa Cruz Municipality, vehicle registry, 2008). Of the 204 owners, about 43% drive...
their own vehicle, while 57% contract one or more drivers, depending on the number of vehicles they own. In other words, of the 260 taxis in Santa Cruz, 67% are driven by employees and 33% by their owners. Income levels vary significantly among these groups. (Figure 4).

For owners who contract a driver (117), the purchase of a taxi represents a sound investment, generating approximately US$365 per month (net) for each taxi. This amount alone explains why so many people have purchased taxis in recent years. The initial cost of purchasing a taxi and the time required to recuperate this cost is the most significant barrier to investment. A taxi costs an average of US$20,000 and it must be exchanged for a new taxi every five years according to the law. If the taxi is resold for around US$5000, the investment represents a cost of US$250 per month.

Taxi owners pay a fixed salary to contracted drivers, averaging US$370/month. However, the driver must pay a daily amount back to the taxi owner (between $40-$50/day) to help cover maintenance costs and various permits. This payment or “leasing fee”, which is not related to the fares collected, provides the owner approximately US$1150/month. The other expenses for the owner include cooperative or company dues (average of US$20/month), municipal taxes (average of US$50/year), and maintenance (approximately US$140/month).

Taxi owners who drive their own vehicles earn the most (average of US$745/month; Figure 5), since they do not pay a driver’s salary; however they must work at the same intensity of other drivers. Owner/drivers must also pay for their fuel. This is the most important expense, averaging US$290/month. However this cost is subsidized by the Ecuadorian government, and has been for more than 20 years. In

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**Figure 5.** Monthly average economic situation (in US$) of each person involved in the taxi sector. Source: personal surveys - taxi drivers (n = 120) and owners (n = 60).
fact, the national fuel subsidy, plus an additional subsidy to cover the cost of transporting fuel to the archipelago, reduces the price of gasoline by approximately US$1/gallon and the price of diesel by approximately US$1.56/gallon (Jácome, 2007). In this sense, the Ecuadorian government expends more than US$10 per day for every taxi circulating in Santa Cruz.

Finally, contracted taxi drivers earn around US$380 per month. Although the average daily fares collected total around US$50, most of this is paid back to the owner. In general, fares are not sufficient to cover the cost of “leasing” the vehicle and buying the gasoline (the 119 taxi driver employees surveyed indicated that they pay for the gas). Although driver-employees earn only a bit more than the owner who doesn’t have to do the driving, taxi driving is highly attractive to young men from continental Ecuador who could not earn as much in their town of origin (of the taxi drivers who are not galapagueño, more than 60% came to Galapagos for work). The surveys reveal that only 10% of taxi drivers were born in Galapagos, and that more than half of the immigrant taxi drivers arrived in the archipelago after 2000.

While taxis generate benefits, those benefits are distributed unequally among owners, owner/drivers, and driver/employees. Taxis remain an attractive investment to those with sufficient resources, because owners can find drivers willing to work for little money.

Taxis in Santa Cruz – organized disorder

While economic incentives explain the increase in the number of taxis in Santa Cruz, the traffic jams and disorder created by taxis constantly circulating in Puerto Ayora is better understood through the “organization” of this economic sector.

To use a vehicle as a taxi, an owner must be a member of one of three taxi cooperatives or two taxi companies of Santa Cruz and obtain a permit from the Provincial Commission of Transportation, Transit, and Road Safety. Beyond this, each taxi owner manages their business as they see fit, with limited controls or regulations (owners decide who to hire, how much to pay, when to operate, etc.). In reality, the “taxi system” is a conglomeration of 204 independent businesses. Taxi cooperatives and companies are little more than associations of private interests. Members will defend a common objective only when personal interests appear to be threatened, for example when the municipality proposed to establish taxi stands to reduce traffic. The contractual relationship between driver/employees and the owners they work for may explain the competition among taxis for passengers (which translates into speeding and constant circulation), since drivers only begin to earn money after they cover the daily lease fees. Also, since the fare is independent of the time required for a given trip, taxi drivers gain the most advantage when they deliver their passengers as rapidly as possible.

The lack of regulation can also help to explain the sense of competition that exists within the taxi sector. However, there are a number of laws that limit the importation of vehicles, including new taxis. Five different regulations have been established since 1997, when it was decreed that “importation of automobiles is authorized only for activities of conservation, agriculture, and to renovate public and private transportation.” The regulations of 1999 and 2005 established moratoria on the importation of vehicles to Galapagos. Even so the number of vehicles and taxis in Santa Cruz continues to increase.

The difficulty of regulating this sector was demonstrated when the project to establish taxi stands, proposed by the municipality of Santa Cruz, failed. Taxis continue to circulate continuously searching for passengers, resulting in air and noise pollution, increased traffic, and even traffic jams on some streets. The situation is compounded by the lack of signage, which makes it dangerous to walk or to travel by bicycle in Santa Cruz, as demonstrated by recent accidents involving taxis (see for example, the local newspaper El Colono, April 2009 and May 2009).

1998: Ley Orgánica de Régimen Especial para la Conservación y el Desarrollo Sustentable de la Provincia de Galápagos, approved by the National Congress, Official Register No. 278, 18 March 1998.
2009: El reglamento substitutivo de control de ingreso de vehículos motorizados y maquinaria a la provincia de Galápagos, approved by the INGALA Council via Resolution No. CI-11/12-Il-2009.
Discussion

In just a few years, taxis in Santa Cruz have become omnipresent in the lives of the population. It has become common to use a taxi to travel relatively short distances and the number of taxis continues to increase. The high density of taxis in Santa Cruz can be explained by the structure of the “taxi system.” Incentives in that system explain the competition between taxi drivers, which results in a race for clients and higher velocities.

After months of study, surveys, and interviews, we asked ourselves if public authorities are capable of regulating this sector, which appears to hold a great deal of power. Nevertheless, increased levels of traffic, noise, and danger to pedestrians and cyclists have deteriorated the quality of life in Puerto Ayora, and this must be reversed. With this in mind, we propose a series of recommendations:

- Reduce the constant circulation of empty taxis by creating taxi stands in the principal areas of use and/or develop a radio system similar to that of San Cristóbal.

- Accompany these measures by rotations in work hours of the taxi drivers to better match supply and demand, thus avoiding the excessive number of taxis on the roads of Santa Cruz. This measure could improve working conditions of the taxi drivers without reducing their income; if taxis only circulate with passengers, the number of taxis in circulation could be nearly halved without decreasing the service to the population.

- Develop other means of transport, including buses and minibuses, to reduce both emissions and traffic. While a taxi usually has no more than three or four passengers (when they are not empty), a bus can transport up to 45.

- Improve the conditions for bicyclists and pedestrians, by creating pedestrian walkways and sidewalks and extending the network of bike lanes and paths, thus providing greater incentive to use these modes of transport.

Conclusion

Decision-making requires political will and strong grassroots support. As the principal means of transportation in Santa Cruz, the taxi fleet represents a public service. At the same time, however, this sector is transforming the inhabited areas of the island. The
extension of asphalt and the ever-increasing number of vehicles is contributing to a lifestyle that is incompatible with the fragile Galapagos environment. Citizens should be able to find a better balance between mobility and protection of their quality of life. To do this, there must be greater transparency regarding the economic benefits of the taxi cooperatives and companies, and a commitment by these groups to improve the organization of the sector. At the provincial level, the recently created Vehicles Committee must justify the importation of every new taxi.

It is disingenuous to present Galapagos as a “natural paradise” if the current transportation situation in Santa Cruz continues. Sustainable, locally-based tourism that is attractive to visitors who are tired of traffic and noise in their cities of origin requires a reduction in the number of taxis, the elimination of costly gasoline subsidies, and the development of a transportation system and culture that is better adapted to the island environment.